

## FLUCTUATION OF BIRD LIFE WITH CHANGE IN WATER LEVEL

BY E. L. MOSELEY

In the late spring of 1929, the water in Lake Erie became higher than it had been previously for nearly half a century. It was three feet higher than in May, 1926. In the Sandusky region and farther west, the water was probably never so high before. The western part of the lake gradually deepens because of slow subsidence of the land, as shown in my "Formation of Sandusky Bay and Cedar Point." There are no long-time continuous gage readings showing the water level anywhere west of Cleveland, where the lake was as high in July, 1876, as in May, 1929. The recent high water in the upper lakes and in Lake Erie was due in part to more than the normal precipitation in this region in the fall of 1928 and much more than normal in the first half of 1929. At Sandusky, the excess from January 1 to May 31, 1929, amounted to 6.17 inches. In other words, nearly fifty per cent more rain than usual fell in the first five months of the year. At the end of October the excess amounted to 8.06 inches. The high water in Lakes Michigan, Huron, St. Clair, and Erie was due also to the opening of sixteen locks in St. Mary's River at Sault Ste. Marie from August to December of 1928, dumping millions of cubic feet of water into Lake Michigan every minute, to lower Lake Superior, where high water was threatening the operations of the power plants.

The high water favored the marsh birds in two ways: it afforded more food, it made it harder for four-footed enemies to get to them and their nests. In 1929, some important items of food for these birds were many times as abundant as they had been for several years before. Wild rice, which in periods of moderately high water had been common in the Sandusky marshes, had become scarce during the low water period of 1923 to 1927, but the roots were not dead, so that when sufficient water covered them the plants grew up and fruited again. The bladderwort (*Utricularia vulgaris*) forms hibernacula (winter buds) which sink to the bottom and avoid the ice but are floated to the top in the spring by gas bubbles that form in them. These hibernacula, when abundant, form an important part of the food of coots, and perhaps of other birds. For several years previous to 1928, extensive areas of marshland had too little water for the proper development of these plants but the high water of 1929 enabled them to make a luxuriant growth. In their bladders are caught crustacea and other animals. Whether birds get any animal food from these plants, I do not know. In 1929, duckweed covered

large expanses of quiet water, where for several years previously there had been only mud.

The three kinds of plants just mentioned afforded many times as much food in 1929 as in any one year from 1923 to 1927. The same is probably true of *Vallisneria*, or tapegrass, *Potamogeton*, or pondweed, and other aquatic plants. The lotus (*Nelumbo lutea*) was formerly found in such abundance in marshes east of Sandusky as to enable some enterprising boys to pay a large part of their school expenses by going in a power-boat to gather the buds and opening blossoms, which they sent to Cleveland. These beautiful plants had almost died out because of low water, but in 1929 showed signs of reviving.

During the years when the water was low, minks, weasels, raccoons, skunks, and other predatory mammals could easily make their way to most parts of the marsh without much swimming. Nesting birds were in danger. High water has changed this. Moreover, raptorial birds have become scarce, the little Screech Owl and the Marsh Hawk being now the only ones that are frequently seen.

For several years past birds of many kinds have increased over the country generally, because of a growing sentiment in their favor, more bird sanctuaries, altered game laws, sustained activities of game wardens, of Audubon Societies, and of Isaac Walton Leagues. This protection has affected directly the bird population of the marshes about Lake Erie. It has also increased the number of birds coming to these marshes from the south and other directions. However, there would not have been such a large increase in the number that made their home and reared their young here if they had not found more abundant food than in previous years.

For most of the facts regarding the number of birds in the Sandusky marshes in 1929, and the increase of certain aquatic plants which afford them food, I am indebted to my former pupil, Henry Graefe, who was a surgeon in the World War. For several summers past he and his family, all of them nature lovers, have spent much time upon or close to the marsh of the Wyandotte Shooting Club about six miles east of Sandusky. This marsh is well guarded from poachers. He thinks that fifty times as many King Rails, gallinules, and Coots were hatched there in 1929 as in any one of several previous years. In marshes west of Sandusky gallinules and Coots were even more abundant. Soras and Virginia Rails showed a noticeable increase but less than the preceding species.

American Bitterns were heard more frequently than usual and Great Blue Herons were very numerous. About a hundred were in sight at one time, perched on spiles in the lake. These herons have increased over a wide territory, due, no doubt, to better protection. For the same reason, two American Egrets were seen by Dr. Graefe east of Sandusky and by observers in other places in northern Ohio in July or early in August.

Of ducks, the most notable increase was in Wood Ducks, many of them reared in the marsh. Several times in September, he observed a hundred or more at a time. Men employed to guard the marsh said they had seen as many as 500 Wood Ducks. Gadwalls, although they do not stay in the marsh continuously, were more numerous than for five or six years before.

Mallards, Black Ducks, and red-legged Black Ducks, were about as common as in previous years; teals of both kinds were rather more numerous than usual, Pintails less numerous. More Pied-billed Grebes were seen than usual.

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## THE ECONOMIC IMPORTANCE OF BIRDS AS INSECT PREDATORS

BY C. N. AINSLIE

On the surface this may seem a simple subject to discuss. We all know that many birds live on the insects they capture and we also know that insects are always on hand to be eaten, so what is there to talk about? The bugs eat the gardens and the birds dispose of the bugs and save vegetation, consequently the birds are the salvation of the gardeners and the farmers.

I suspect this is the general and popular view of this subject, particularly among ornithologists, many of whom imagine that farming would be a failure if it were not for the birds that control and destroy insect pests. Like most questions, economic ones especially, there are two sides to this one and I want for a few minutes to turn it around so both sides may be seen.

We are aware that animate nature is a tremendously complicated affair, with all its forms of life, animal and vegetable, so intimately combined and correlated that it is simply impossible to deal with or even discuss any one section of this vast complex and ignore any other part. No one realizes this more than an entomologist, who is,